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# Pluralism about Belief States<sup>1</sup>

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## Abstract

With his Humean thesis on belief, Leitgeb seeks to say how beliefs and credences ought to interact with one another [Leitgeb, ta]. To argue for this thesis, he enumerates the roles beliefs must play and the properties they must have if they are to play them, together with norms that beliefs and credences intuitively must satisfy. He then argues that beliefs can play these roles and satisfy these norms if, and only if, they are related to credences in the way set out in the Humean thesis. I begin by raising questions about the roles that Leitgeb takes beliefs to play and the properties he thinks they must have if they are to play them successfully. After that, I question the assumption that, if there are categorical doxastic states at all, then there is just *one* kind of them—to wit, beliefs—such that the states of that kind must play *all* of these roles and conform to *all* of these norms. Instead, I will suggest, if there are categorical doxastic states, there may be *many* different kinds of such state such that, for each kind, the states of that type play *some* of the roles Leitgeb takes belief to play and each of which satisfies *some* of the norms he lists. As I will argue, the usual reasons for positing categorical doxastic states alongside credences all tell equally in favour of accepting a plurality of kinds of them. This is the thesis I dub *pluralism about belief states*.

## 1. Introduction

There are two sorts of doxastic state that receive most of the attention of epistemologists: categorical or all-or-nothing beliefs (henceforth, *beliefs*), on the one hand; and graded or partial beliefs (henceforth, *credences*), on the other. With his Humean thesis on belief, Leitgeb seeks to say how the beliefs and credences of one and the same agent ought to interact with one another [Leitgeb, ta]. That is, the Humean thesis on belief is a normative thesis. It does not provide a reduction of belief to credence, nor a reduction of credence to belief. Rather, it presupposes that both sorts of state exist and are ontologically independent of one another. It then provides a requirement of rationality that jointly constrains both beliefs and credences.

To argue for this thesis, Leitgeb enumerates the roles that beliefs must play and the properties they must have if they are to play them, together with norms that beliefs and credences intuitively must satisfy. He then argues that beliefs can play these roles and satisfy these norms if they are related to credences in the way set out in the Humean thesis; moreover, he argues that only such beliefs can do this.

I begin in this paper by raising some questions about the roles that Leitgeb takes beliefs to play and the properties he thinks they must have if they are to do this successfully.

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After that, I wish to question the assumption that, if there are categorical doxastic states at all, then there is just *one* kind of them—to wit, beliefs—such that the states of that kind must play *all* of these roles and conform to *all* of these norms. Instead, I will suggest, if there are categorical doxastic states, there may well be *many* different kinds of such state such that, for each kind, the states of that type play *some* of the roles that Leitgeb takes belief to play and each of which satisfies *some* of the norms that he lists. Thus, we have a broader doxastic pluralism than Leitgeb imagines: there is not just a single kind of quantitative doxastic state and a single kind of categorical doxastic state; rather, there is a single quantitative kind and a number of different categorical kinds. As I will argue, the usual reasons for positing categorical doxastic states alongside credences all tell equally in favour of accepting a plurality of kinds of them. This allows us to treat a number of different putative norms governing the relationship between belief and credences as equally correct—they simply govern different kinds of categorical doxastic states. This is the thesis I dub *pluralism about belief states*.

Let us remind ourselves of the Humean thesis on belief:

**Humean thesis on belief ( $HT^v$ )** Suppose an agent's beliefs are given by  $Bel$  and her credences by  $P$ . Then if she is rational, then  $P$  is a probability function and

$$Bel(X) \text{ iff } P(X | Y) > r \text{ for all } Y \text{ such that } Poss(Y) \text{ and } P(Y) > 0$$

(where  $Poss(Y)$  iff not  $Bel(\sim Y)$ —that is,  $Poss(Y)$  iff  $Y$  is doxastically possible for the agent).

That is, an agent believes a proposition if she has a sufficiently high credence in it, and that high credence is not undermined by any evidence she might receive that is compatible with her current beliefs.<sup>3</sup>

## 2. Action and belief

According to Leitgeb, beliefs that are related to credences in the way required by the Humean thesis on belief have the sort of stability that is required for certain central roles that beliefs are required to play. In particular, Leitgeb holds that beliefs must be stable in this way if they are to guide action, support assertion, and provide the input to suppositional reasoning. He provides three examples to illustrate the point. In this section, we will consider the example of an action sustained by a stable belief; in section 3, we will turn to the example of an assertion supported by a stable belief.

Let us begin by considering Leitgeb's example of an action sustained by a stable belief. The action is walking to the kitchen and it is performed on the basis of the belief that there is a drink in the kitchen together with the desire for a drink. Leitgeb argues as follows: The action is extended in time and, during the course of the action, new evidence may be acquired. If the belief is to support the extended action from start to finish, it must remain unchanged throughout the action's duration. Leitgeb claims that beliefs that are related to credences in accordance with the Humean thesis will remain

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<sup>3</sup> Leitgeb has explored close relatives of this thesis in a series of recent papers [Leitgeb, 2013], [Leitgeb, 2014]. Another close relative is the view investigated in [Arló Costa and Pedersen, 2013].

unchanged in this way because of their stability in the face of new (doxastically possible) evidence. This is in contrast to beliefs that are related to credence by the Lockean thesis:

**Lockean thesis on belief ( $LT^r$ )** If our agent's beliefs are given by  $Bel$  and her credences by  $P$ , then if she is rational,  $P$  is a probability function and

$$Bel(X) \text{ iff } P(X) > r$$

Beliefs that obey the Lockean thesis can be undermined by new evidence that is consistent with the agent's current beliefs. In fact, Lockean beliefs can often be undermined by acquiring as evidence a proposition that one currently believes! To see this, consider a three-ticket fair lottery. For each  $i = 1, 2, 3$ , let  $t_i$  be the proposition *Ticket  $i$  won't win*. And let us set our threshold for Lockean belief at  $r = 0.6$ . Then, as is well-known from the Lottery Paradox, if the agent's beliefs satisfy the Lockean thesis, then each of  $t_1, t_2, t_3$  is believed. After all,  $P(t_i) = 2/3 > 0.6$ , for  $i = 1, 2, 3$ . Now suppose that  $t_3$  is learned. Then, if the agent updates her credences by conditionalizing on her new evidence, and if her new beliefs satisfy the Lockean thesis relative to her new credences, only  $t_3$  is now believed. After all,  $P(t_3 | t_3) = 1 > 0.6$ , while  $P(t_1 | t_3) = P(t_2 | t_3) = 1/2 < 0.6$ . Thus, Lockean beliefs are not stable in the face of new evidence to the same extent that Humean beliefs are. Thus, one might conclude, Humean beliefs play the role of guiding action better than Lockean beliefs.

However, acquiring new evidence is not all that I might do as I walk to the kitchen. For instance, I might start to speculate on whether the drink is in the fridge or on the sideboard, both of which are in the kitchen. Indeed, this seems to be exactly the sort of thing I will do as it approaches the time when it will become important for me to have more specific beliefs. When we begin an extended action, we often do not consider the most fine-grained set of possibilities between which we'll have to decide in order to complete the action. Thus, at the beginning of the action of walking to the kitchen, I do not consider the part of the kitchen to which I will walk in order to retrieve the drink. However, as I approach the kitchen, I will begin to consider this because it will be relevant to where I walk when I reach that room. Now, if the extended action is supported by a Lockean belief, this makes no difference. Suppose I divide one possibility—that is, the possibility in which the drink is in the kitchen—into two—that is, a possibility in which the drink is in the fridge and a possibility in which it is on the sideboard—and I retain my credence in the single, more coarse-grained possibility that the drink is in the kitchen, dividing that credence in some way over the two more fine-grained possibilities that make it up: then, because my credence that the drink is in the kitchen is unchanged, it remains above the threshold, and I retain the Lockean belief I had in that possibility. In contrast, in such a case, I may well come to lose a Humean belief in that possibility. I will illustrate this below. The problem is that Humean beliefs are *partition-dependent*. Once I've divided up the possibilities in this new way, and assigned them credences, I introduce new doxastic possibilities. And some of these, if learned, would undermine my high credence in the drink being in the kitchen. Thus, by introducing the finer-grained partition, we change the Humean beliefs in the original, coarser-grained partition, even though all credences in that original partition remain unchanged.

To see this phenomenon in action, let's consider some possible credences in the propositions in question. Suppose that, as I begin my walk to the kitchen, I have credences only in the two possibilities *Drink in kitchen* and *Drink not in kitchen*. And suppose those credences are given by  $P$ :

$$P(\text{Drink in kitchen}) = 0.7 \quad P(\text{Drink not in kitchen}) = 0.3$$

Then, if  $r = 0.6$ , it is permissible for me to have the Humean belief that the drink is in the kitchen. Now suppose that, as I walk to the kitchen, I fine-grain the possibilities but retain my credences in the original propositions. And suppose my new credences are given by  $P'$ :

$$\begin{aligned} P'(\text{Drink in fridge}) &= 0.35 & P'(\text{Drink in kitchen}) &= 0.7 \\ P'(\text{Drink on sideboard}) &= 0.35 & P'(\text{Drink not in kitchen or drink in fridge}) &= 0.65 \\ P'(\text{Drink not in kitchen}) &= 0.3 & P'(\text{Drink not in kitchen or drink on sideboard}) &= 0.65 \end{aligned}$$

Then, if the threshold is  $r = 0.6$ , then it is not permissible for me to have the Humean belief that the drink is in the kitchen, since there are now doxastically possible propositions—namely, *Drink in fridge or drink not in kitchen* and *Drink on sideboard or drink not in kitchen*—that, if learned, would undermine my high credence that the drink is in the kitchen.<sup>4</sup>

Thus, while Humean belief is stable under acquisition of new (doxastically possible) evidence and Lockean belief is not, Humean belief is not stable under fine-graining of possibilities while Lockean belief is. If an extended action can be based on a belief only if that belief is immune to events that might occur during the course of that action, both Lockean and Humean beliefs have something in their favour and something against them.

Leitgeb returns to the role of belief in guiding action later in his paper, where he considers situations in which we can read off facts about the expected utility of certain acts in a decision problem from our beliefs about those acts. Inevitably, the situations are limited, and one might wonder whether we encounter them often enough for their treatment to be significant for us. They are the situations in which every outcome of an action takes one of two utility values,  $u_{\max}$  and  $u_{\min}$ , where  $u_{\min} < u_{\max}$ . For any action  $A$ , we let  $Use(A)$  be the proposition that  $A$  is useful—that is, it is the proposition that is true at all worlds in which the outcome of  $A$  has utility  $u_{\max}$ . Leitgeb also assumes that actions are merely functions from states of the world to outcomes, so that every such function is an action. But this is in fact inessential when the theorem is restated as below. Leitgeb then notes the following two features of Humean beliefs:

- i. If an agent has a Humean belief that  $A$  is useful, but does not have a Humean belief that  $B$  is useful, then the expected utility of  $A$  relative to the agent's

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- $P'(\text{Drink in kitchen} \mid \text{Drink in fridge or drink not in kitchen}) = 0.35/(0.3 + 0.35) < 0.6$
- $P'(\text{Drink in kitchen} \mid \text{Drink on sideboard or drink not in kitchen}) = 0.35/(0.3 + 0.35) < 0.6$

Note that *Drink in fridge or drink not in kitchen* and *Drink on sideboard or drink not in kitchen* are both doxastically possible for me since my credences in their negations fall below the threshold  $r = 0.6$ .

- credences exceeds the expected utility of  $B$  relative to those credences. That is, if  $Bel(Use(A))$  and not  $Bel(Use(B))$ , then  $EP(u(A)) > EP(u(B))$ .
- ii. If an agent has a Humean belief that  $B$  is useful—that is,  $Bel(Use(B))$ —and  $A$  has maximal expected utility, then the agent has a Humean belief that  $A$  is useful—that is,  $Bel(Use(A))$ —and

$$EP(u(A)) - EP(u(B)) < (1-r)(u_{\max} - u_{\min})$$

These are useful properties. But they don't distinguish Humean beliefs from Lockean beliefs, since the latter have these properties too. After all, if the agent has a Lockean belief that  $A$  is useful and doesn't have a Lockean belief that  $B$  is useful, then  $P(Use(A)) > r \geq P(Use(B))$  and thus

$$\begin{aligned} EP(u(A)) &= P(Use(A))u_{\max} + (1-P(Use(A))u_{\min} \\ &> P(Use(B))u_{\max} + (1-P(Use(B))u_{\min} \\ &= EP(u(B)) \end{aligned}$$

Furthermore, if  $A$  has maximal expected utility, then  $EP(u(A)) \geq EP(u(B))$ . This entails that  $P(Use(A)) \geq P(Use(B))$ . So, if  $Bel(Use(B))$ , then  $Bel(Use(A))$ . Moreover, if  $Bel(Use(B))$ , then  $P(Use(B)) > r$ , and this gives

$$\begin{aligned} EP(u(A)) - EP(u(B)) &\leq u_{\max} - (P(Use(B))u_{\max} + (1-P(Use(B))u_{\min}) \\ &< u_{\max} - (ru_{\max} + (1-r)u_{\min}) \\ &= (1-r)(u_{\max} - u_{\min}) \end{aligned}$$

So Humean beliefs and Lockean beliefs are equally good at providing information about credences and expected utilities that might be used to guide action in the respects covered by Leitgeb's theorem. I think this points to a more general fact. When we are considering an extended action—that is, an action during the performance of which we might acquire new evidence—it may well be that there are circumstances in which Humean beliefs provide better reasons for carrying out this action than Lockean beliefs. In particular, if we know that we have considered the possibilities at the finest level of grain that is required to complete satisfactorily the project of which the action is a component part, then Humean beliefs provide more robust reasons for action than Lockean beliefs do. However, not all action is extended. Often, when we make a choice, the action we choose is performed immediately and in a short period of time. I might choose to buy a lottery ticket, for example, or choose what food to order at a restaurant, or choose whether or not to take a scarf when I go outside. These are the cases covered by Leitgeb's theorem. In these cases, which do not involve extended actions, the theorem shows that we can use the fact that we have certain Humean (or, it turns out, Lockean) beliefs to guide our action. For instance, if we have a Humean or Lockean belief that a particular action is useful (in the sense given above), then we know that we can't go too badly wrong by performing it—that is, its expected utility will not deviate too far from the maximal possible expected utility. This is useful information. Thus, we surely wish to have it as often as it is available. But of course Lockean beliefs are easier to come by than Humean ones. Indeed, any Humean belief is also a Lockean belief, but not vice versa (providing we hold the threshold fixed). Thus, it seems to me that, while Humean beliefs play the role of supporting extended action better than Lockean beliefs—at least in certain circumstances—Lockean beliefs do better at supporting action that is not extended over time because Leitgeb's theorem

holds of them just as it holds of Humean beliefs, and they are more plentiful than Humean beliefs. For instance, suppose I must choose whether or not to buy a lottery ticket. It will cost me £1 if I do, and the prize is £100. Thus, not buying has maximal expected utility (amongst the options available to me) if my credence that it will lose is greater than 100/101. Thus, if  $r = 100/101$ , then a Lockean belief that my ticket will lose is sufficient to justify not buying. The fact that I would not thereby have a Humean belief that my ticket will lose does not remove the justification that this Lockean belief provides.

This is a crude division of labour—Humean beliefs for extended action, Lockean beliefs for non-extended action—and indeed we will see in section 5 that there are certain actions that *neither* Lockean *nor* Humean beliefs support well. But, crude or not, the fact that we might optimise our practical reasoning and decision-making by dividing the job between different kinds of categorical doxastic states that answer to different norms connecting belief and credence already provides support for the thesis of section 7, namely, that we would do well to posit not one kind of categorical doxastic state, but many, each of which plays some roles of belief well and others more poorly. The upshot of this section is that Humean beliefs can sometimes support extended action better than Lockean beliefs; but Lockean beliefs support non-extended action better because they are more plentiful.

### 3. Assertion and belief

As well as guiding action, beliefs are often taken to support and justify assertion. This is another role that Leitgeb claims can only be played by a propositional attitude with the sort of stability that Humean beliefs can offer. He is thinking particularly of assertions that we make in order to provide our audience with the sort of information they require in order to be able to carry out an extended action—the sort of extended action that we encountered in the previous section. Suppose I assert a proposition that, if believed by my audience, would support a particular extended action. Then, if they are going to take my assertion as grounds to perform this action, they would want to be reassured that any evidence they encounter as they carry out the extended action would not undermine the belief of mine that prompted my assertion. And this can only happen, Leitgeb contends, if the belief that prompted my assertion is stable in the face of new (doxastically possible) evidence.

Now, we might counter this argument as we countered the argument in the previous section: Humean beliefs may be stable in the face of new (doxastically possible) evidence, but they are not stable in the face of fine-graining the space of possibilities. Indeed, since your audience typically doesn't know how finely you have chopped up the possibilities, they will never be able confidently to adopt your belief as their own when you assert it. But there is another problem here too. Suppose Leitgeb is correct—assertions are justified only by Humean beliefs. I assert proposition  $X$  and you hear. You know that I have a Humean belief in  $X$ . But all that tells you is that my credence in  $X$  is above  $r$  and will remain above  $r$  whatever evidence comes my way, *providing I consider it doxastically possible*. And that is of little use to you unless you know what I count as doxastically possible. And to know that is to know which proposition is the strongest proposition I believe. But we rarely assert the strongest proposition we believe. Indeed, if an audience really needs to know the strongest proposition that the speaker believes in order to make use of her assertion, and if assertions really are bound

by Grice's Maxim of Quantity—which exhorts us to provide as much information as is necessary and no more—then we would expect speakers frequently to assert the strongest proposition they believe [Grice, 1975]. But this rarely, if ever, happens. When I know that you are thirsty, I might assert that there is a drink in the kitchen; I do not, however, assert that there is a drink in the kitchen and the sun is shining and the swallow flies south with the sun and buttercups are yellow, even though I surely believe that conjunction.

Now, Leitgeb might deny this latter claim: he might claim that, in fact, we do always assert the strongest proposition that we believe, just as is predicted by the Humean thesis on belief together with Grice's Maxim of Quantity; or, at the very least, we do this when we think that our audience may take our assertion and use it to support an extended action. To do this, he must deny that I really do believe the long conjunction I stated at the end of the previous paragraph. How might he do that? One way would be to say that, at any given time, my beliefs are defined only over a fairly restricted algebra of propositions. Thus, when I know that you are thirsty and I come to consider what I might assert that would help you, perhaps my beliefs come to be defined only over the propositions *There is a drink in the kitchen* and *There is no drink in the kitchen*. If that is correct, I have no belief in the long conjunction mentioned above. And thus we recover the required claim that I assert the strongest proposition I believe in this case. But I lack this belief not because I don't have the requisite stably high credence in it—we might suppose that I do—but simply because that is not a proposition towards which I have any categorical doxastic attitude, be it belief, disbelief, or suspension; it is a proposition that lies outside the restricted algebra on which my beliefs, disbeliefs, and suspensions are defined. If this is correct, then Leitgeb's picture is a little more complicated than it seems at first. He must allow that it is possible to have stably high credence in a proposition and yet not have a belief in it. Thus, we have the following updated version of the Humean thesis on belief:

**Humean thesis on belief\*** ( $HT^*$ ) Suppose an agent's beliefs are given by  $Bel$  (defined over algebra  $F$ ) and her credences by  $P$  (defined over algebra  $F' \supseteq F$ ). Then if she is rational, then  $P$  is a probability function and

$$Bel(X) \text{ iff } X \in F \text{ and } P(X | Y) > r \text{ for all } Y \in F \text{ such that } Poss(Y) \text{ and } P(Y) > 0$$

This move raises the following question: What determines  $F$  at a given time? And this question creates a dilemma for Leitgeb's account. On the one hand, we might suppose that the agent chooses  $F$  from amongst the possible subalgebras of  $F'$ . If  $F$  is to do the work that Leitgeb needs it to do, the choice must be determined by the use to which that agent is going to put this belief once formed. For instance, if I am going to use a belief to ground assertions that will assist someone who is thirsty, I will choose an algebra that contains propositions that relate to the location of a drink as well as those propositions I think they might encounter as evidence during the process of retrieving that drink. But how am I to make these choices? Do I use my probability function over  $F'$  together with a utility function over possible choices of  $F$  that is determined by my goals in making the choice? If that's the case, it isn't clear that having categorical doxastic states provides the efficiency gain that is often claimed as their central motivation. Beliefs are simpler than credences, and while they cannot be used to make decisions in all situations, when they can, the decision procedure is simpler than the decision procedure based on credences. However, this gain in simplicity is lost if, in



forming beliefs for a particular purpose, we must appeal to our credences to determine the algebra over which those beliefs are defined. On the other hand, we might suppose that the agent does not choose  $F$ ; that is, we might assume that there is no rational process that leads to an agent defining her belief over one algebra rather than another. But in that case we should expect whatever process does determine  $F$  often to pick an entirely inappropriate algebra. And if that occurs often, we would expect to see its consequences often: we would expect to see the agent often asserting long conjunctions such as the one above because they are strongest propositions believed in the algebra  $F$  that she has had foisted upon her; we would expect to see the agent refraining from extended action because the high credence that might support it is not stable relative to all the strange and obscure possibilities considered in that arationally determined algebra.

#### 4. The Preface Paradox and evidence

Leitgeb's methodology is this: he begins by stating roles that beliefs must play and norms that they must obey; then he argues that Humean beliefs can play all these roles and satisfy all these norms; then he argues that only Humean beliefs can do this. If these were the only roles that beliefs are required to play and the only norms they are required to satisfy, and if Humean beliefs and only Humean beliefs really could play these roles and satisfy these norms, then we would have a strong argument for the Humean thesis on belief. But there are other roles we might take beliefs to play and norms we might take them to satisfy, and it seems that Humean beliefs cannot do these things.

For instance, we would like the beliefs in the Preface Paradox to be permissible [Makinson, 1965]. That is, we would like it to be permissible for me to have beliefs, but also for me to believe that there is at least one of my beliefs that is false, while at the same time not believing that a contradiction is true. The reason we would like this to be permissible is that it seems possible that each of these jointly inconsistent attitudes is well supported by my evidence: each of my beliefs may be well supported by my total evidence while at the same time it is also well supported by my total evidence—which includes evidence of my fallibility—that some of my beliefs are false. But these beliefs cannot be Humean beliefs, since Humean beliefs are closed under conjunction, whereas these beliefs are not. If they were, then I would believe a straightforward contradiction, and I don't.

Thus, when I come to entertain the proposition that I am fallible, I have two choices. I can retain the beliefs I had previously, which are supported by my evidence. But in that case I must believe that I am infallible, and that involves believing a proposition whose negation is strongly supported by my evidence. Or I can abandon some of my beliefs, letting the evidence of my fallibility act as a defeater for them. But of course it is ad hoc to abandon some of the beliefs and not others, since the evidence of my fallibility does not specify which beliefs are false. So I end up letting the evidence of my fallibility act as a defeater for all of my beliefs, leaving me nearly entirely agnostic, even though that evidence may only tell me that one in every thousand of my beliefs is false.

Indeed, Humean belief interacts oddly with evidence even outside cases like the Preface Paradox. After all, on the Humean view, in order to determine whether or not I may rationally believe a given proposition  $X$ , it is not enough to consult my total evidence and determine whether, all things considered, it supports  $X$  strongly. That may be

sufficient to determine whether I may have a high credence in *X*; but it is not sufficient to determine whether or not I may believe *X*. To determine that, I also have to consider the other propositions towards which I have a doxastic categorical attitude and I have to ask whether learning any of those that I don't disbelieve would weaken the support given by my total evidence to *X* to such an extent that I would lose my high credence in it. But, intuitively, these latter facts seem irrelevant to whether my current belief in *X* is rationally permissible—what determines that is whether my *current* evidence supports *X*, not whether my *future* evidence will continue to do so.

The upshot of this section is that there are certain norms governing the interaction of belief and evidence that cannot be respected by Humean beliefs. In this case, Lockean beliefs play the role well: I can coherently ascribe high credence to each of my beliefs and also to the proposition that at least one of them is false.

### 5. Belief and ascriptions of blame

Here is another role that we would like belief to play for which Humean belief is ill-equipped. As we saw above, we would like beliefs to play a role in justifying actions. And we saw that Lockean and Humean beliefs seem to be useful in the justification of different sorts of actions. But there is a class of actions for the justification of which neither Lockean nor Humean beliefs are useful. These are certain moral actions, such as ascribing blame.

Lara Buchak has argued that on no account on which the norms for belief are stated purely in terms of credences can beliefs play the role of justifying ascriptions of blame [Buchak, 2014]. According to Buchak, doxastic states that justify ascriptions of blame are distinguished not by the credences that are linked to them, but by the sort of evidence that has given rise to those beliefs—more precisely, two rational agents with the same credences but different evidence may differ in the ascriptions of blame that they are justified in making. For instance, there is reason to think that bare statistical evidence can never alone justify a doxastic state that in turn supports an ascription of blame, while eyewitness evidence, for instance, can, even in cases in which the bare statistical evidence supports higher credences than the available eyewitness account does. Thus, suppose I leave the room during afternoon tea with my friends, Rachel and Philip. When I come back, my wallet has gone. Whom is it permissible for me to blame? Suppose I know that men are a hundred times more likely to steal than women; and I know nothing more that is relevant. Then I will have a very high credence that Philip stole my wallet. But, intuitively, it seems that I do wrong if I blame him. After all, it seems wrong to blame someone solely on the basis of their membership in a group amongst which guilt is likely. On the other hand, suppose I don't possess this statistical evidence about the different rates of theft amongst men and women; but suppose instead that, as I came back into the room, I saw Philip's hand disappearing into his pocket and caught a flash of red fabric, the material from which my wallet is made. Then I may have a high credence that Philip stole my wallet, but perhaps rather less high than was warranted by the statistical evidence considered previously—it was, after all, only a *flash* of red fabric, and my wallet isn't the only item to be made of that material. Nonetheless, in this case it seems that I do him no wrong if I blame him, even though my credence in his guilt is in fact lower. Buchak offers a diagnosis of the difference, but the details are not relevant for our purpose here. All that is relevant is that there is a further role that beliefs need to play that cannot be played by either Humean beliefs or

Lockean beliefs. Thus, this seems to give us reason to posit a further kind of categorical doxastic state, over and above Lockean beliefs and Humean beliefs—we might call them Buchakean beliefs.<sup>5</sup>

## 6. The aim of belief

Beliefs, it is often said, aim at the truth. One way to make this precise is to say that a significant source of the epistemic value of a true belief is its truth and a significant source of the epistemic disvalue of a false belief is its falsity. Thus, whatever else beliefs are, we would like them to be the sort of states that are valued for their accuracy as representations of the world. This suggests the account of epistemic value for beliefs that was proposed by Carl Hempel, and that has recently been adapted by Kenny Easwaran and Branden Fitelson [Hempel, 1962], [Easwaran, ms], [Fitelson and Easwaran, ta]. On this account, a true belief gets a positive epistemic value of  $R$  (for some  $R > 0$ ), a false belief gets a negative epistemic value  $-W$  (for some  $W > 0$ ), and a lack of belief in a proposition is neutral, receiving a value of 0 whether the proposition is true or false.<sup>6</sup> Now, given this account of epistemic utility, if an agent has credences, we can ask when her beliefs are recommended by her credences. After all, we can consider each proposition  $X$  towards which she wishes to have a categorical doxastic attitude. And we can consider the decision between the act of believing  $X$  and the act of not believing  $X$ . We can ask which of these two acts maximises expected epistemic utility relative to the agent's credences and given the account of epistemic utility just outlined. Now, if the Hempel-Easwaran-Fitelson account is correct, a belief maximises expected epistemic utility for an agent with credence function  $P$  iff its expected epistemic utility exceeds the expected epistemic utility of not having the belief, which is always 0. Thus, a belief maximizes expected epistemic utility iff its expected epistemic utility is positive iff  $P(X)R + (1-P(X))(-W) > 0$  iff  $P(X) > W/(R + W)$ . This suggests that, if we let  $r = W/(R + W)$ , then an agent should have a belief in  $X$  iff  $P(X) > r$ . That is, this account of epistemic utility motivates the Lockean thesis (with  $r = W/(R + W)$ ), and undermines the Humean thesis. After all, in nearly all cases, if our agent satisfies the Humean thesis with respect to  $r = W/(R + W)$ , then she will not maximise expected epistemic utility relative to her own credences; there will be an alternative set of beliefs—namely, the Lockean beliefs relative to that threshold—that have greater expected epistemic utility.

Thus, again, we have a central role that belief is taken to play---the role of representing the world---that is better played by Lockean beliefs than by Humean beliefs.

## 7. Pluralism about belief states

In sections 2 and 3, we considered some of the roles that Leitgeb takes Humean beliefs to play well—supporting action and justifying assertion. We concluded that they do this better than Lockean beliefs in certain rather limited situations involving extended action and assertion that supports extended action; the situations are those in which the finest grain of possibilities is considered from the beginning of the project of which the action is a part. Moreover, while we haven't considered it here, it is a central feature

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<sup>5</sup> See [Staffel, ms] for further thoughts on the failure of Humean beliefs to support ascriptions of blame.

<sup>6</sup> For Hempel,  $R = W$ .

of Humean beliefs that they are closed under multi-premise logical consequence: that is, if I have Humean beliefs in some propositions, and those propositions together logically entail a further proposition, then I have a Humean belief in the further proposition—in particular, Humean beliefs are closed under conjunction. One great advantage that this bestows on Humean beliefs is that an agent can reason with her beliefs using logic without referring back to her credences every time she draws an inference in order to check that the inferred proposition is believed. This sort of autonomous reasoning with beliefs is not open to the agent with Lockean beliefs, since it is not even guaranteed that, if she has Lockean beliefs in two propositions, then she has a Lockean belief in their conjunction. So this feature of Humean beliefs gives another advantage over Lockean beliefs. However, in sections 4 and 6, we saw that there are roles for belief to play—the purely epistemic roles of responding to evidence and representing the world—that are better played by Lockean beliefs. And in section 5, we considered a role for beliefs that neither Lockean nor Humean beliefs can play.

So none of our existing accounts of the relationship between belief and credence allows our beliefs to play all of the roles we demand of these doxastic states. How should we respond to this? One response would be to seek out a new account that does allow this. But we have reason to think this will never work. After all, the epistemic utility considerations in section 6 entail the Lockean account; but we know that Lockean beliefs aren't closed under logical consequence and are often unable to support ascriptions of blame. Similarly, by a representation theorem due to Leitgeb, we know that the Humean thesis on belief is the only account that respects the left-to-right direction of the Lockean thesis and also guarantees that beliefs are closed under logical consequence [Leitgeb, 2013]. Thus, Humean beliefs are the only beliefs that can play these roles. But we have seen above that there are other roles they can't play: they aren't plentiful enough to provide the best basis for non-extended action; they don't maximize expected epistemic utility; and so on. In short, the set of roles that we would like beliefs to play are jointly unsatisfiable. It is not that philosophers have simply failed to formulate an account of the relationship between beliefs and credences that allows beliefs to play all of these roles. It is rather than such an account cannot exist.

What are we to do in this situation? One response is to pick a consistent subset of this set of roles, endorse the account of belief that satisfies those, and try to undermine the plausibility of the remaining requirements. That has been the standard strategy in this area up to now. But I'd like to propose an alternative strategy. I'd like to propose that we posit more than one kind of categorical doxastic state. Doing this, we might allow that there are Humean beliefs and Lockean beliefs and Buchakean beliefs, and perhaps other kinds of belief that we have yet to consider—they all exist, and each is governed by a different set of norms.

When we think about why we posit categorical doxastic states, this sort of pluralism about categorical doxastic states makes sense. Our credences (perhaps together with our total evidence) give the most complete account of our doxastic state. It is to them that we would turn to make our decisions or to reason about the world if there were no limitations on the time we had to do this, or on the cognitive resources at our disposal. But if there are such limitations, we may require further states over and above our credences that simplify the rich information contained in those quantitative states and make some of the salient parts of that information available for quick access and easy computation. Enter categorical doxastic states, which we call beliefs. But why think

that there is just one such kind of state? Perhaps it is useful to have different kinds of state for different purposes, with each different kind of state answering to a different set of norms. Thus, we might have categorical doxastic states the role of which is to guide extended action; the norm that governs these kinds of state might be the Humean thesis. As well as this, we might have categorical doxastic states to which we appeal when we are making decisions concerning a range of possible non-extended actions; their norm might be the Lockean thesis. Furthermore, we might have categorical doxastic states that we use when we wish to ascribe blame to someone; their norm might involve the sorts of evidential considerations to which Buchak draws our attention. This, then, is *pluralism about belief states*. I submit that it is the natural response to the discovery that there can be no single kind of categorical doxastic state that can play all of the roles that we require such states to play.

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